

REMARKS

The present amendment is in response to the non-final Office Action mailed February 28, 2006, in which Claims 1 through 22 were rejected. Applicant has thoroughly reviewed the outstanding Office Action and the references cited therein. The following remarks are believed to be fully responsive to the Office Action and, when coupled with the amendments made herein to the application, are believed to render the application in condition for allowance.

Claims 1, 9, 17 and 18 are amended herein. No claim is cancelled herein. No new claim is added at this time. Accordingly, Claims 1 through 22 remain pending.

All changes are made for clarification and are based on the application and drawings as originally filed. It is respectfully submitted that no new matter is added.

Favorable reconsideration is respectfully requested.

CLAIM REJECTIONS – 35 U.S.C. SECTION 103

1. Claims 1 – 5, 8 – 12, 17 and 18

The Examiner rejected Claims 1 – 5, 8 – 12, 17 and 18 under 35 U.S.C. Section 103 as being unpatentable over Sawa in view of Massee. Claims 1, 9 and 17 are independent.

Applicant respectfully traverses this rejection.

Applicant amended independent Claims 1, 9 and 17 for clarification. Dependent Claim 18 has also been amended for consistency.

With respect to the reference to Sawa, the Examiner cited this reference as teaching a robotic roller hemming arrangement such as that of the invention and, further, that the roller can be pressed by a force-sensitive servo control.

With respect to the reference to Massee, the Examiner cited this reference as teaching a roller forming arrangement in which the roller is pressed by a memorized position/pressure control. The Examiner also stated that Massee teaches that such a system eliminates the instability encountered with force-sensitive servo systems due to variations in thickness of the material or eccentricity of the roller.

The Examiner stated that it would have been obvious to one having ordinary skill in the art to employ position/pressure control of the hemming roller in Sawa, following the suggestion of Massee, rather than force/servo control in order to avoid instability due to material thickness tolerance variations.

Initially Applicant respectfully questions the appropriateness of combining Sawa and Massee in the manner undertaken by the Examiner. Specifically, while both patents relate to forming machines, the Massee apparatus is essentially stationary and the piece to be deformed (in this instance, the metal plate 3 shown in FIG. 1) needs to be brought to the apparatus. Furthermore, Massee does not provide for hemming two work pieces together, but appears to be limited to forming a single work piece. Conversely, the apparatus of Sawa teaches a roller hemming apparatus having a movable arm where the article to be formed (Wi/Wo), a design which, in general, is much closer to that of the present invention. Applicant respectfully submits that when solving the problems

of known hemming machines, an inventor would *not* have considered looking at machines which (1) are stationary having no robotic arm to come to the work piece and (2) are not involved in the hemming of two or more work pieces. Accordingly, Applicant respectfully submits that the combination of Sawa and Massee proposed by the Examiner is inappropriate.

However, working with the Examiner's proposed combination of Sawa and Massee, Applicant has amended Claims 1, 9 and 17 for clarification and in such a manner as to differentiate the present invention more completely from the cited art.

Amended Claim 1: Specifically, Claim 1 has been amended to more fully define the construction of the forming and joining apparatus from the prior art.

Referring to Massee, the forming roller 4 is positioned on the long axis of the holder 5. Conversely, the roller 72 of the present invention is defined as being "off-axis" with respect to the long axis of the reciprocating hub 62. This is more than a mere design choice insofar as this configuration provides the invention of the present apparatus with far more versatility in metal forming.

Referring to Sawa, the long axis of the slide block 37 (which holds the wheel 4) is perpendicular to the long axis of the robot hand 2. Conversely, the long axis of the reciprocating hub 62 is in axial alignment with the long axis of the faceplate 54.

Applicant respectfully submits that neither Massee nor Sawa, standing alone or in combination, teach the arrangement of the invention as defined in

amended Claim 1.

Accordingly, Claim 1 as amended is believed to be patentable over the art of record.

Amended Claims 9 and 17: Claims 9 and 17 have been amended to more fully define the computer and the program contained in the computer.

Referring to Sawa, this reference is silent on the use of computers.

Referring to Massee, this reference teaches the use of detectors to accumulate data under manual control. Reference may be had to col. 2, line 66 *et seq.* where it is specified that “The control unit 16 is connected to a detector 17 for determining the position of the lower slide 6. Further, the detector 18 is provided for determining the compression of the spring means 13.” Applicant acknowledged the inclusion in the prior art of “feedback mechanisms” that have been previously used at page 1, paragraph 4 of the application as filed.

However, according to the present invention and as set forth at page 16, paragraph 16 of the application as filed, the “programmably positioned distance” is set directly into the robot controller without the necessity of a feedback mechanism such as described in the prior art and, in this instance, by Massee. This is more than a mere design choice. By eliminating such a feedback arrangement, substantial cost savings can be achieved. In addition, by eliminating the feedback arrangement, the practical inconvenience of cables, hoses and other connectors along the robotic arm between the roller tool and the controller/computer can be entirely eliminated.

Applicant has amended Claims 9 and 17 to specify that the controller is pre-

programmed with the appropriate tool-driving program.

Applicant respectfully submits that neither Massee nor Sawa, standing alone or in combination, teach the arrangement of the invention as defined in amended Claims 9 and 17.

Accordingly, Claims 9 and 17 as amended are believed to be patentable over the art of record.

Reconsideration and withdrawal of the rejection of Claims 1 – 5, 8 – 12, 17 and 18 are respectfully requested.

2. Claims 6, 7, 13 – 16, and 19 - 21

The Examiner rejected Claims 6, 7, 13 – 16 and 19 – 21 under 35 U.S.C. Section 103 as being unpatentable over Sawa in view of Massee as applied to Claim 1 above, and further in view of Persson. Each of the rejected claims is a dependent claim.

Applicants respectfully submit that insofar as the claims rejected herein are directly or indirectly dependent from the independent claims (Claims 1, 9 and 17) which have been amended for clarification as set forth above and are believed to be allowed, Applicant respectfully submits that these claims are in condition for allowance as well.

Reconsideration and withdrawal of the rejection of Claims 6, 7, 13 – 16 and 19 - 21 are respectfully requested.

3. Claim 22

The Examiner rejected Claim 22 under 35 U.S.C. Section 103 as being unpatentable over Sawa in view of Massee as applied to Claim 7 above, and further in view of Polon.

Applicants respectfully submit that insofar as the claim rejected herein is directly dependent from independent Claim 17 which has been amended for clarification as set forth above and is believed to be allowed, Applicant respectfully submits that Claim 22 is in condition for allowance as well.

Reconsideration and withdrawal of the rejection of Claim 22 is respectfully requested.

REQUEST FOR INTERVIEW

The undersigned Attorney for Applicant respectfully requests the opportunity to discuss this application with the Examiner **either in person when the undersigned will be at the Patent Office on September 13, 2006, or via telephone before the Examiner issues a substantive response.** The Examiner is requested to contact the undersigned attorney at 248-258-4496 at the Examiner's convenience to arrange such an interview.

CONCLUSION

In light of the above amendments and remarks, Applicant respectfully submits that all pending claims as currently presented are in condition for allowance.

Applicant respectfully requests that a Notice of Allowance be issued in this case.

Respectfully submitted,



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